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Unit 2 Study Guide: Part I: Properties, Translating, & Solving Equations

1. Which statement is FALSE?

A. $-8 + 8 = 0$

B. $\frac{1}{15} \cdot 15 = 1$

C. $-7 + 0 = -7$

D. $-10 \cdot 1 = 10$

2. Which property is illustrated in the number sentence below?

$$3 + (-3) = 0$$

A. Additive identity property

B. Multiplicative identity property

C. Additive inverse property

D. Multiplicative inverse property

3. Which equation illustrates the multiplicative inverse property?

A. $0 \cdot -2 = 0$

B. $5 \cdot \frac{1}{5} = 1$

C. $10 \cdot 0 = 0 \cdot 10$

D. $4 \cdot 1 = 4$

4. Jamal says that $(6 + 5) + 2$ is equal to $(5 + 6) + 2$. Which of the following properties did he use?

A. Associative property of addition

B. Distributive property

C. Commutative property of addition

D. Inverse property of addition

5. Which property is shown in the following number sentence?

$$7 \cdot 2 + 7 \cdot 6 = 7(2 + 6)$$

A. Associative property of addition

B. Commutative property of addition

C. Commutative property of multiplication

D. Distributive property

6. Use the additive inverse property to complete the missing part of the mathematical sentence.

$$21 + \boxed{-21} = 0$$

7. Use the multiplicative inverse property to complete the missing part of the mathematical sentence.

$$\frac{1}{6} \cdot \boxed{6} = 1$$

8. Circle your answer below. Which property is illustrated by the number sentence? $3 + (6 \cdot -2) = 3 + (-2 \cdot 6)$

Associative Property of Addition	Commutative Property of Addition	Distributive Property
Associative Property of Multiplication	Commutative Property of Multiplication	Multiplicative Identity Property

9. Andre hit four more home runs than twice the number of home runs Larry hit. Together they hit 10 home runs. Which equation represents the total number of runs scored?

$$2x + 4 = 10$$

A. $2n + 4 = 10$

B. $2n - 4 = 10$

C. $10n + 2 = 4$

D. $10n - 2 = 4$

10. Which represents 7 less than the quotient of h and the number 14?

A. $(h + 14) - 7$

B. $7 - 14h$

C. $14h - 7$

D. $\frac{h}{14} - 7$

11. Which phrase best represents the algebraic expression: $\frac{p}{8} - 5$?

A. 5 less than the difference of p and 8

B. 5 less than the quotient of p and 8

C. p divided by the difference of 8 and 5

B. p minus the quotient of 8 and 5

12. Which sentence best describes the equation $9x + 3 = y$?

A. The product of 3 and 9 plus x is y .

B. The sum of x and 3 multiplied by 9 equals y .

C. The sum of 9 and x multiplied by 3 equals y .

D. The product of 9 and x plus 3 equals y

13. Which phrase best represents the expression $\frac{(4-a)}{2}$?

A. The difference of 4 and a number divided by 2.

B. The difference of 2 and a number divided by 4.

C. The quotient of 4 and a number minus 2.

D. The quotient of 2 and a number minus 4.

14. Which phrase best represents the expression "Two less than f "?

A. $2f$

B. $2 + f$

C. $2 - f$

D. $f - 2$

15. Circle the algebraic expressions.

$c - 6 = -3$

$3c = 6$

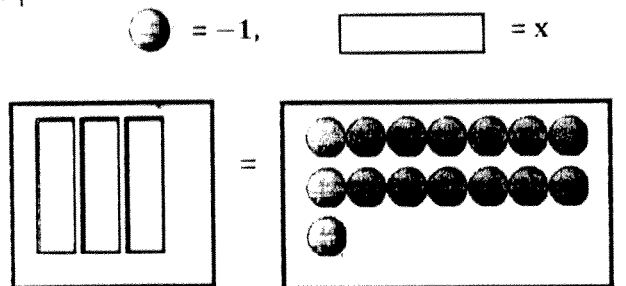
$c + 6$

$6c + 3 = -6$

$3x + c + 6c$

$c + 6 = 3$

16. Use the model below to write an equation and find the solution.?



~~$3x = 15$~~ $x = -5$

A. $-3x = 15; x = -5$
 B. $3x = -15; x = -5$
 C. $-15x = 3; x = \frac{1}{5}$
 D. $15x = -3; x = -\frac{1}{5}$

17. Which statement describes how to solve the equation below in one step?

$$x + 9 = 32$$

- A. Add 9 to both sides.
 B. Add 32 to both sides.
 C. Subtract 9 from both sides.
 D. Subtract 32 from both sides

18. Each student needs 12 minutes to give a report for English class. A class period is 48 minutes long. The equation to determine the number of students who could give a report in one class period is $12s = 48$ where s is the number of students. How many students can give a report?

- A. none
 B. 4
 C. 36

$$\frac{12s}{12} = \frac{48}{12}$$

$$s = 4$$

19. What value of y makes the equation below true?

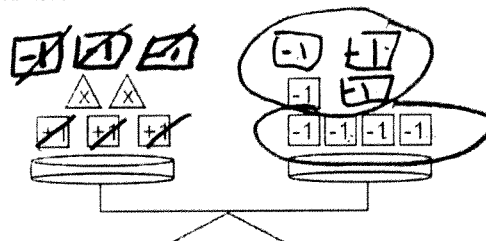
A. 80
 B. 96
 C. 104
 D. 120

$$\frac{y}{5} - 4 = 20$$

$$\frac{y}{5} = 24$$

$$y = 120$$

20. The balance below models an equation. What is the value of x ?



$$2x + 3 = -5$$

$$\frac{2x + 3}{-3} = \frac{-5}{-3}$$

$$2x = -8$$

$$x = -4$$

A. 4
 B. -4
 C. 8
 D. -8

21. A furniture rental store charges a down-payment of \$100 and \$75 per month for a table. Hilde paid \$550 to rent the table. Solve $75n + 100 = 550$ to find the number of months Hilde rented the table.

- A. 6
 B. 8.8
 C. -6
 D. -8.8

$$75n + 100 = 550$$

$$\frac{75n + 100}{-100} = \frac{550}{-100}$$

$$75n = 450$$

$$\frac{75n}{75} = \frac{450}{75}$$

$$n = 6 \text{ months}$$

22. Susan is solving the equation show.

$$3x + 10 = -8$$

Choose the steps that Susan would use to solve the equation and write them in order.

Step 1: Subtract 10 from both sides

Step 2: divide both sides by 3

Subtract 10 to both sides

Subtract -8 from both sides

Add 7 to both sides

Divide both sides by 3

Divide both sides by -3

Multiply both sides by 3

23. Directions: Draw pictures in each box to represent the tiles.

John is solving the equation

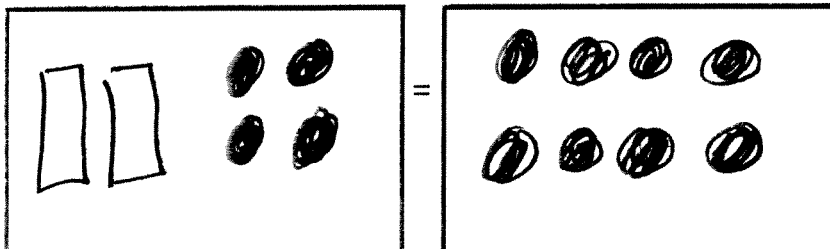
$$2x - 4 = -8$$

His teacher gave him the following materials.

○ = 1, ● = -1,

□ = x

Use the provided materials to draw a picture of the equation.



24. A. Use the distributive property to simplify the left side of the equation below. Write the new equation and solve for x>

$$5(x - 8) = 35$$

$$\begin{array}{r} 5x - 40 = 35 \\ +40 \quad +40 \\ \hline 5x = 75 \\ \div 5 \quad \div 5 \\ \hline x = 25 \end{array}$$

25. Solve the equation. Show your work.

$$8x - 3x + 3 = 28$$

$$\begin{array}{r} 5x + 3 = 28 \\ -3 \quad -3 \\ \hline 5x = 25 \\ \div 5 \quad \div 5 \\ \hline x = 5 \end{array}$$

Solve the equation. Show your work.

$$\begin{array}{r} 26. \quad \frac{1}{7}x + 3 = 66 \\ -3 \quad -3 \\ \hline \frac{1}{7}x = 63 \\ \times 7 \quad \times 7 \\ \hline x = 441 \end{array}$$

$$27. x - (-9) = -13$$

$$\begin{array}{r} x + 9 = -13 \\ -9 \quad -9 \\ \hline x = -22 \end{array}$$